

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

---

## **General Project Information**

### **Project Description Narratives**

#### **Purpose, Scope, and Technical Approach:**

The CAO is the lead office for the management, planning, and integration of the transuranic (TRU) waste program. The activities in this project include: 1) Integration and infrastructure activities required to prepare the DOE TRU waste complex for waste shipments to WIPP - waste characterization certification - TRU waste sites quality assurance project plans (QAPjP); 2) Integrated activities to improve the envelope of performance for transportation system and TRU waste acceptance - matrix depletion studies - performance demonstration activities for all TRU waste sites; 3) Support to Secretarial commitments to the community - Carlsbad Environmental Monitoring and Research Center (CEMRC) - Carlsbad Department of Development (DoD) Advanced Training Facility; 4) Expert support from groups such as the National Academy of Sciences (NAS), and the Bureau of Land Management.

Technical Approach: The Carlsbad Area Office staff directs contracting activities in support of mission activities. The following contractors provide expert support:

1) Carlsbad Technical Support Contractor (eight contractors under one contract: Advanced Sciences, Inc.; Roy F. Weston, Inc.; Jacobs Engineering Group Inc.; Lamb Associates, Inc.; NFT, Inc.; Rogers & Associates Engineering Corporation; RE/SPEC Inc.; and Science Application International Corporation.

- Leads: System Integration; Waste Acceptance Criteria development; Waste Integration Development; Quality Assurance; Regulatory oversight; and E&SH oversight.

- Supports: Experimental program management; corridor emergency response activities; transportation management; long term regulatory management and program planning

2) Sandia National Laboratories

- Leads in TRU waste integration and maximization studies

3) TRU Waste Sites

- Leads in Characterization standards development for performance measures of TRU waste stream knowledge

- Supports TRU Waste integration studies

#### **Project Status in FY 2006:**

Continuing support to the management of the National TRU Waste Program

#### **Post-2006 Project Scope:**

Continued disposal of the remaining TRU waste inventory until the WIPP waste volume capacity reaches the statutory limits in FY 2034, after which five years are planned to seal the repository and dismantle and decommission the surface facilities. Active institutional controls will then be activated and maintained for 100 years.

#### **Project End State**

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 1 of 10

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

---

## **Project Description Narratives**

TRU waste management activities for both CH and RH waste are projected to be completed by FY 2039 after completing the Disposal Phase in FY 2034 and five years for decommissioning of the surface facilities and permanently closing the underground. In accordance with the WIPP Land Withdrawal Amendment Act of 1996, DOE will have disposed of 175,600 cubic meters of TRU waste in the WIPP facility. Starting in FY 2039, a reduced Federal staff and technical contractor support will maintain the active institutional controls associates with the land and records of the WIPP. Monuments and markers will be built at the site to warn people of the presence of the repository. Active institutional controls over the site will be maintained for 100 years. Low risk has been assigned based upon performance assessments included in the licensing of the facility, which requires no migration of hazardous or radioactive material for 10,000 years. Following completion of the active institutional control phase, the surface area will be unrestricted for recreational and agricultural uses.

### **Cost Baseline Comments:**

The CAO has institutionalized a formal program planning and budget execution process. The confidence level of cost estimates for the next three years is very high (+/- 5%). Out year estimates through FY 2006 have been developed with a confidence level of +/- 10 to 20%. Estimates from FY 2007 through completion are within +/- 30%. There are no contingency funds included in the CAO estimates.

Current CAO assumptions support operations of the WIPP facility, including its infrastructure, as an operational nuclear facility capable of receiving TRU waste at an initial disposal at a rate of 5 shipments per week and ramping to 17 shipments per week. The CAO baseline provides adequate funding to support the National TRU Waste Management Program.

Assumption is that support will be required through FY 2039 which is the completion of the dismantling and decommissioning phase, then a Federal staff of approximately 10 FTE's will be required to meet the active institutional controls requirements on land management, security management, and public relations (augmented by Technical Support Contractor) as specified in final agreements during closure of the site.

Projected costs after FY 2070 through the Active Institutional Control period of FY 2139 are an additional \$202M. The total Life Cycle cost from FY97 is \$2.4B. Escalation has been applied to the activities in accordance with the DOE Environmental Management guidelines.

### **Safety & Health Hazards:**

S&H activities are addressed in CAO-1 and CAO-3

### **Safety & Health Work Performance:**

S&H activities are addressed in CAO-1 and CAO-3

### **PBS Comments:**

The CAO has recommended a Management Plan configuration for implementation that will guide the ten-year planning process consistent with the strategic objectives, as well as achieve the overall TRU waste management goals. The facilities and activities described in the National TRU Waste Management Plan, Revision 1, combined with the disposal-ready waste preparation schedules, summarize current guidance to support development of site 2006 Plan.

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## Project Description Narratives

The WIPP program is statutorily directed by the WIPP Land Withdrawal Amendment Act of FY96 (Public Law 104-201). EPA has been designated as the regulator, the state of New Mexico regulates the RCRA permit, and independent oversight is undertaken by the Environmental Evaluation Group (EEG) and the National Academy of Sciences. The Sandia National Laboratories has performed as the WIPP program Scientific Advisor. 40 CFR 194 establishes the specific criteria which must be met prior to EPA's approval of the Compliance Certification Application which was submitted to EPA in October 1996. The WIPP Disposal Decision Plan (Rev. 4) identifies major milestones which must be completed in order to start disposal operations.

### Baseline Validation Narrative:

The National Research Council's report on the WIPP dated October, 1996, validated the project as a viable solution for the permanent, safe disposal of defense generated radioactive TRU waste. Mevatec Corporation contracted in FY 1998 to perform an independent baseline validation of the scope, schedule, and cost of the National TRU Waste Program managed by the Carlsbad Area Office (CAO). This validation and the final report was issued in April, 1999. The validation findings are consistent with this IPABS update. Information sources used in the CAO independent budget validation include, but are not limited to: Integrated Priority List Details for the FY 2000 Budget (CAO, March 1998); FY 2000/2001 Validation Submittals from CAO and TRU Waste Sites, CAO Technical Assistance Contractors (CTAC), Sandia National Labs (Vols. 1-2), and Westinghouse, WID (Vols. 1-6); Minutes of all FY 1999/2000 Validation and FY 2000-2006 Program Review Meetings; FY 2000 Validation and FY 2001-2006 Program Planning; IPABS Handbook, Rev 8; International Research and Development Plan, 1 October 1997, Rev. 0; CAO FY 2000/2001 Validation and FY 2002 through FY 2006 Planning Addendum; "Budget Planning, Programming & Execution Process Description - Draft"; and The National TRU Waste Management Plan, DOE/NTP-9691204, Rev. 1.

## General PBS Information

<b>Project Validated?</b>	Yes	<b>Date Validated:</b>	9/23/1996
<b>Has Headquarters reviewed and approved project?</b>	No		
<b>Date Project was Added:</b>	12/1/1997		
<b>Baseline Submission Date:</b>	7/7/1999		
<b>FEDPLAN Project?</b>	No		

<b>Drivers:</b>	<b>CERCLA</b>	<b>RCRA</b>	<b>DNFSB</b>	<b>AEA</b>	<b>UMTRCA</b>	<b>State</b>	<b>DOE Orders</b>	<b>Other</b>
	N	Y	Y	Y	N	Y	Y	Y

## Project Identification Information

<b>DOE Project Manager:</b>	Ines Triay
<b>DOE Project Manager Phone Number:</b>	505-234-7300

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## General PBS Information

DOE Project Manager Fax Number: 505-234-7027  
DOE Project Manager e-mail address: triayi@wipp.carlsbad.nm.us  
Is this a High Visibility Project (Y/N): Y

## Planning Section

### Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	224,216	1,899,191	2,123,407	28,458	28,458	22,807	22,807	23,910	20,253	20,250	23,124	20,479	21,341	21,183	22,411	
PBS Baseline (constant 1999 dollars)	211,518	838,005	1,049,523	28,458	28,458	22,807	22,807	23,910	19,721	19,312	21,599	18,735	19,122	18,590	19,264	
PBS EM Baseline (current year dollars)	224,216	1,899,191	2,123,407	28,458	28,458	22,807	22,807	23,910	20,253	20,250	23,124	20,479	21,341	21,183	22,411	
PBS EM Baseline (constant 1999 dollars)	211,518	838,005	1,049,523	28,458	28,458	22,807	22,807	23,910	19,721	19,312	21,599	18,735	19,122	18,590	19,264	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	20,679	20,433	20,742	21,221	113,649	127,324	142,650	159,817	138,645	114,984	128,945	143,065	158,731	176,113	195,398	216,795
PBS Baseline (constant 1999 dollars)	17,409	16,848	16,751	16,786	84,498	85,322	86,158	87,000	68,026	50,848	51,393	51,393	51,393	51,393	51,393	51,394
PBS EM Baseline (current year dollars)	20,679	20,433	20,742	21,221	113,649	127,324	142,650	159,817	138,645	114,984	128,945	143,065	158,731	176,113	195,398	216,795

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 4 of 10

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS EM Baseline (constant 1999 dollars)	17,409	16,848	16,751	16,786	84,498	85,322	86,158	87,000	68,026	50,848	51,393	51,393	51,393	51,393	51,393	51,394

## Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

## Project Reconciliation

### Project Completion Date Changes:

Previously Projected End Date of Project: 9/1/2139

Current Projected End Date of Project: 9/1/2039

Explanation of Project Completion Date Difference (if applicable):

### Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	1,015,971	Actual 1997 Cost:	28,458	Actual 1998 Cost:	22,807
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	964,706	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			26,047
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	990,753				

### Project Cost Changes

Cost Adjustments    Reconciliation Narratives

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 5 of 10

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## Project Reconciliation

<b>Cost Change Due to Scope Deletions (-):</b>	10,966	Rescope of work for STTP due to funding limitations.
<b>Cost Reductions Due to Efficiencies (-):</b>		
<b>Cost Associated with New Scope (+):</b>		
<b>Cost Growth Associated with Scope Previously Reported (+):</b>	18,522	1 year delay of waste receipt; Correction of WID unescalated labor rates unchanged since FY97.
<b>Cost Reductions Due to Science &amp; Technology Efficiencies (-):</b>		
<b>Subtotal:</b>	998,309	
<b>Additional Amount to Reconcile (+):</b>	-51	IDMS de-escalation calculation assumes that each five year period is based on a linear plan.

---

<b>Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):</b>	<b>998,258</b>
--	----------------

## Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Begin Passive Institutional Controls	CAO-004-005		5/1/2038								Y
Completion of Active Institutional Controls	CAO-004-004		5/1/2038								Y
Completion of Decommissioning Phase	CAO-004-003		5/1/2038								Y
Completion of Disposal Phase	CAO-004-002		5/1/2033								Y
Project Mission Complete	CAO-004-006		9/1/2039								Y
Completion of Pre-Disposal Phase. (CAO does not agree that this is a high visibility project)			3/31/1999						Y		
Begin Paths to Closure and Life Cycle Costs			10/1/1996								

## Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Begin Passive Institutional Controls	CAO-004-005										
Completion of Active Institutional Controls	CAO-004-004										

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Completion of Decommissioning Phase	CAO-004-003										
Completion of Disposal Phase	CAO-004-002										
Project Mission Complete	CAO-004-006				Y						
Completion of Pre-Disposal Phase. (CAO does not agree that this is a high visibility project)											
Begin Paths to Closure and Life Cycle Costs				Y							Beginning of Paths to Closure and Life Cycle Costs

## Technology Needs

Site Need Code: **CAO-99-01**

Site Need Name: **On-line hydrogen and VOC analysis using low cost microsensors for CH-TRU and RH-TRU waste containers**

Focus Area Work Package ID: **Pu-02-Stabilization**

Focus Area Work Package: **Miscellaneous Pu Residue Stabilization and Disposition**

Focus Area: **PLUTOFA**

Agree with Technology Link: **N**

Benefits (Cost, Risk Reduction, Both): **Both**

### Technologies

### Cost Savings (in thousands of dollars)

### Range of Estimate

Solutions for TRU Waste Streams without Disposition Options

200,000

Medium

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 7 of 10

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## Technology Needs

**Site Need Code:** CAO-99-02

**Site Need Name:** Mobile RH-TRU Waste Handling System

**Focus Area Work Package ID:** MW-03

**Focus Area Work Package:** Handling Mixed Waste Contaminated Materials During Characterization, Treatment, Packaging, and Disposal

**Focus Area:** MWFA

**Agree with Technology Link:** Y

**Benefits (Cost, Risk Reduction, Both):** Both

### Technologies

Mechanical Systems - Remote and Automation Technology Needs Investigation

### Cost Savings (in thousands of dollars)

### Range of Estimate

12,000

Medium

Mechanical Systems - Mobile Adaptation of HANDSS-55 Technology

12,000

Medium

**Site Need Code:** CAO-99-03

**Site Need Name:** Quantitative evaluation of waste drum integrity with advanced nondestructive inspection (NDI) techniques

**Focus Area Work Package ID:** MW-05

**Focus Area Work Package:** Payload Enhancement for Transporting TRU Waste within Restrictive Regulatory Limits

**Focus Area:** MWFA

**Agree with Technology Link:** N

**Benefits (Cost, Risk Reduction, Both):** Both

### Technologies

### Cost Savings (in thousands of dollars)

### Range of Estimate

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 8 of 10



# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## Technology Needs

Site Need Code: CAO-99-04

Site Need Name: Sampling and Characterization of Remote-Handled Wastes

Focus Area Work Package ID: MW-01

Focus Area Work Package: Nondestructive Characterization for Treatment, Transportation, and Disposal of MLL and MTRU Waste.

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

### Cost Savings (in thousands of dollars)

### Range of Estimate

Site Need Code: CAO-99-05

Site Need Name: Automated Data Review and Validation

Focus Area Work Package ID: MW-01

Focus Area Work Package: Nondestructive Characterization for Treatment, Transportation, and Disposal of MLL and MTRU Waste.

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

### Cost Savings (in thousands of dollars)

### Range of Estimate

Deployment of TRU Solutions

2,500

High

Solutions for TRU Waste Streams without Disposition Options

2,500

High

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 9 of 10

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Carlsbad**

Site Summary Level: **Waste Isolation Pilot Plant**

Project **CAO-4 / WIPP TRU Waste Sites Integration and Preparation**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0011**

## Technology Needs

Site Need Code: CAO-99-06

Site Need Name: Layer Reduction by Grout Injection

Focus Area Work Package ID: MW-05

Focus Area Work Package: Payload Enhancement for Transporting TRU Waste within Restrictive Regulatory Limits

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

Solutions for TRU Waste Streams without Disposition Options

### Cost Savings (in thousands of dollars)

75,000

### Range of Estimate

Medium

Site Need Code: CAO-99-07

Site Need Name: Small Quantity Waste Generation Site (SQS) interface to WIPP Waste Information System (WWIS)

Focus Area Work Package ID: MW-05

Focus Area Work Package: Payload Enhancement for Transporting TRU Waste within Restrictive Regulatory Limits

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

Solutions for TRU Waste Streams without Disposition Options

### Cost Savings (in thousands of dollars)

7,000

### Range of Estimate

High

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 10 of 10